

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A system that ~~facilitates optimizing~~ optimizes industrial business operations, comprising:
 - a component that receives data relating to at least one state of a subset of machines that are part of the industrial business operations; ~~and~~
 - a prognostics engine that infers at least one future state of at least a subset of the operations based in part on the received data, the prognostics engine comprising a plurality of intelligent software agents that serve as proxies for at least the subset of machines, for modeling and representing interactions with one another, and for facilitating convergence on modification and control of the subset of machines, for efficiently optimizing industrial business operations; and
 - an optimization component that selects a desired operating point as an optimum performance point within an allowable range of operation about a system set point according to performance characteristic associated with at least one of the machines and controls at least one machine according to the desired operating point.
2. (Original) The system of claim 1, further comprising a host computer that executes the prognostic engine.
3. (Original) The system of claim 1, the prognostic engine comprising a classifier.
4. (Original) The system of claim 1, at least a subset of the machines comprising prognostic components that collaborate in a distributed manner.

5. (Previously Presented) The system of claim 4, at least one of the prognostics components performs prognoses for a cluster of machines.
6. (Previously Presented) The system of claim 4, the prognosis engine and the prognostic components collaborating to improve operating rate of at least a subset of the machines.
7. (Original) The system of claim 3, the classifier performs a probabilistic analysis in connection with the inference.
8. (Original) The system of claim 1, at least a subset of the machines and/or components are represented by intelligent agents.
9. (Original) The system of claim 1, at least a subset of the machines and/or components are physically located remote from one another.
10. (Currently amended) A method that ~~facilitates~~ optimizes assets optimization in an industrial automation environment, comprising:
 - receiving and analyzing in real-time data relating to diagnoses and prognoses of operational aspects of a subset of machines that are part of the industrial automation system;
 - modeling and representing interactions of the subset of machines, for facilitating convergence on modification and control of the subset of machines; ~~and~~
 - modifying asset utilization in the industrial automation system based at least in part as a function of the analyzed diagnostic and prognostic machine data;
 - selecting a desired operating point within an allowable range of operation about a system set point according to performance characteristics associated with at least one of the machines; and
 - controlling at least one machine according to the desired operating point.
11. (Cancelled)

12. (Original) The method of claim 10, further comprising employing an options based analysis in connection with asset management.
13. (Original) The method of claim 11, further comprising obtaining the system set point and the allowable range of operation from a user.
14. (Original) The method of claim 11, wherein selecting the desired operating point comprises:
- correlating at least two of motor efficiency information, pump efficiency information, and motor drive efficiency information in order to derive correlated system efficiency information; and
 - selecting the desired operating point as the optimum efficiency point within the allowable range of operation according to the correlated system efficiency information.
15. (Original) The method of claim 14, wherein controlling the system according to the desired operating point comprises providing a motor speed signal to the motor drive according to the desired operating point.
16. (Original) The method of claim 14, further comprising obtaining at least one of the efficiency information, the allowable range, and the system set point from a user.
17. (Currently amended) The method of claim 14, further comprising obtaining at least one of the efficiency information, the allowable range, and the system set point from a host computer via a network.
18. (Cancelled)
19. (Currently amended) The method of claim 17 48, wherein the at least one of the efficiency information, the allowable range, and the system set point is obtained via wireless communications.

20. (Original) The method of claim 14, further comprising obtaining at least a portion of one of the efficiency information, the allowable range, and the system set point from prior operation of the system.

21. (Original) The method of claim 11, wherein selecting the desired operating point comprises:

correlating component performance information associated with at least two components in the system in order to derive correlated system performance information; and

selecting the desired operating point as the optimum performance point within the allowable range of operation according to the correlated system performance information.

22. (Original) The method of claim 21, wherein controlling the system according to the desired operating point comprises providing a set point to a controller associated with the system according to the desired operating point.

23. (Original) The method of claim 12, further comprising automatically ordering an asset *via* the Internet.

24. (Original) The method of claim 21, further comprising obtaining at least one of the performance information, the allowable range, and the system set point from a host computer.

25. (Original) The method of claim 24, wherein the at least one of the performance information, the allowable range, and the system set point is obtained via a network.

26. (Original) The method of claim 25, wherein the at least one of the performance information, the allowable range, and the system set point is obtained via wireless communications.

27. (Original) The method of claim 21, further comprising obtaining at least a portion of one of the performance information, the allowable range, and the system set point from prior operation of the system.

28. (Original) The method of claim 21, wherein the component performance information comprises at least one of life cycle cost information, efficiency information, life expectancy information, safety information, emissions information, operational cost information, MTBF information, noise information, and vibration information.

29. (Original) The method of claim 28, wherein the system comprises a motorized pump system for pumping fluid, having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, wherein the component performance information comprises efficiency information related to at least two of the motor, the pump, and the motor drive, and wherein the correlated system performance information comprises cost information related to the system operational cost per unit of fluid pumped.

30. (Original) The method of claim 10, wherein the system comprises a motorized pump system having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, and wherein the performance characteristics associated with a plurality of components in the system comprises life expectancies of at least two of the motor, the pump, and the motor drive.

31. (Original) The method of claim 10, wherein the system comprises a motorized pump system having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, and wherein the performance characteristics associated with a plurality of components in the system comprises cost of operation associated with at least two of the motor, the pump, and the motor drive.

32. (Original) The method of claim 10, wherein selecting the desired operating point comprises measuring at least one process variable from a sensor associated with the system.

33. (Currently amended) A system that optimizes ~~facilitates~~ assets ~~optimization~~ in an industrial automation environment, comprising:

means for receiving and analyzing in real-time data relating to prognoses of operational aspects of machines and/or business components that are part of the industrial automation system;

means for modeling and representing interactions between the machines and/or business components; ~~and~~

means for regulating a subset of the machines and/or business components based at least in part as a function of the analyzed diagnostic and prognostic machine data;

means for selecting a desired operating point within an allowable range of operation about a system set point according to performance characteristics associated with at least one of the machines; and

means for controlling at least one machine according to the desired operating point.

34. (Original) The system of claim 33 further comprising means for inferring future states of the subset of machines.

35. (Original) The system of claim 33 further comprising means for inferring future states of the subset of business components.

36. (Original) A computer readable medium storing the components of claim 1.

37. (Original) A computer readable medium having stored thereon computer executable instructions for performing the method of claim 10.

38. (Currently amended) A data packet adapted to be transmitted between at least two computer processes, comprising:

a data field comprising information that regulates operation of a business component based at least upon prognostic data derived by a classifier performing a probabilistic analysis for future state of at least a subset of the operations concerning a machine and a desired operating point selected within an allowable range of operation about a system set point according to performance characteristics associated with at least one of the machines.

39. (Currently amended) An industrial automation layout methodology, comprising:

analyzing machine related prognostic data;

analyzing business concern data;

analyzing business objective data; ~~and~~

specifying machine acquisition based at least in part upon the analyses;

obtaining a system set point, an allowable range of operation and machine performance information;

selecting a desired operating point within the allowable range of operation about the system set point according to performance characteristics associated with at least one of the machines; and

controlling at least one machine according to the desired operating point.

40. (Currently amended) A computer-implemented method for ordering parts and optimizing assets in an industrial automation environment, comprising:

automatically receiving an analyzing data relating to a prognosis of a future state of a machine;

automatically inferring a failure period for at least one part of the machine; ~~and~~

automatically ordering a replacement for the at least one part prior to the inferred failure period;

correlating component performance information associated with one ore more components in the machine in order to derive correlated process performance information; and

selecting a desired operating point as an optimum performance point within a allowable range of operation according to the correlated process performance information.

41. (Original) The method of claim 40 further comprising employing an options based scheme in connection with machine management.

42. (Original) The method of claim 40 further comprising employing an options based scheme in connection with decision support.

43. (Original) The method of claim 40 further comprising employing an options based scheme in connection with asset optimization.

44. (Currently amended) A system that facilitates optimizing industrial business operations, comprising:

a component that receives data relating to state of a subset of machines that are part of the industrial business operations; ~~and~~

a prognostics engine that infers future state of at least a subset of the operations based in part on the received data, the prognostics engine comprising a plurality of intelligent software agents that serve as proxies for at least the subset of machines, for modeling and representing interactions with one another, and for facilitating convergence on modification and control of the subset of machines; and

an optimization component that selects a desired operating point as an optimum performance point within an allowable range of operation about a system set point according to performance characteristic associated with at least one of the machines and controls at least one machine according to the desired operating point.

45. (Original) The system of claim 44, the prognostic engine infers future business conditions.

46. (Original) The system of claim 45, the future business conditions comprising at least one of future raw materials and future product demand.

47. (Currently amended) A system that facilitates optimizing industrial business operations, comprising:

a component that receives data relating to state of the industrial business operations; ~~and~~

a prognostics engine that infers future state of at least a subset of the operations based in part on the received data, the prognostics engine comprising a plurality of intelligent software agents for modeling and representing interactions between the subset of machines, for efficiently optimizing industrial business operations; and

an optimization component that selects a desired operating point as an optimum performance point within an allowable range of operation about a system set point according to performance characteristic associated with at least one of the machines and controls at least one machine according to the desired operating point.

48. (New) The system of claim 1, wherein the optimization component correlates component performance information associated with one or more components in the system comprising at least a pump, a motor and a motor drive in order to derive correlated process performance information.

49. (New) The system of claim 48, wherein the optimization component selects the desired operating point as the optimum performance point within the allowable range of operation according to the correlated process performance information.